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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/699,704	10/30/2000	Heribert Weber	10191/1616	7028

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EXAMINER
MARTIR, LILYBETT

ART UNIT	PAPER NUMBER
2855	

DATE MAILED: 07/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/699,704	WEBER ET AL.	
	Examiner	Art Unit	
	Lilybett Martir	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 April 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a) because they fail to show the heating element and the at least one temperature measurement element as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- In claim 12, the recitation of "an oxide layer is removed" makes said claim indefinite, because said recitation is unclear and vague failing to provide any details about where did said layer come from, and how can said layer be removed if it does not exist, therefore it is unclear how the oxide layer is arranged from said recitation.
- In claim 13, the recitation of "is formed by one of a PECVD operation, a LPCVD operation, and another CVD operation" makes said claim ambiguous, since said recitation discloses an improper Markush grouping.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,4-5, 7-11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Kinard et al. (Pat. 5,393,351). Kinard et al. teaches the claimed invention, including:

- A frame as in element 202 formed by silicon; a membrane held by the frame as in elements 260 and above in Figure 3; a metal layer as in element 208 including a first structure and a second structure and being arranged above the frame; a heating element as are elements 206, 506 or 706 formed by a first structure in the metal layer; at least one temperature measurement element as are elements 208, 210, 508, 510, 708 or 710 formed by a second structure in the layer; and a moisture barrier as in element 268 arranged above the metal layer, as in claim 1.
- The moisture barrier forming a top layer of the mass flow sensor as noted in the position of element 268 in Figure 3, as in claim 4.
- A moisture barrier as in element 268 formed at least in part by at least one of a top sandwich system and a bottom sandwich system (note in Figure 1that the elements that are positioned above element 260 are sandwiched), a top sandwich system including at least one first silicon oxide layer as in element 264 and at least one first silicon nitride layer as in element 262; and a bottom

sandwich system arranged beneath the metal layer and including at least one second silicon oxide layer as in element 260 and at least one second nitride layer as in element 270, as in claim 5.

- A silicon oxide layer arranged directly beneath the metal layer as in element 264 in Figure 3, as in claim 7.
- A nitride layer arranged between the frame and the metal layer as in element 262 in Figure 3, as in claim 8.
- A silicon oxide layer 260 formed by a thermal oxidation (Col. 6, lines 50-53) arranged between nitride layers as in elements 262 and 270, as in claim 9.
- A nitride layer including a silicon nitride layer as in element 262 (Col. 10, lines 67-68), as in claim 10.
- An oxide layer as in element 260 arranged in a recess area beneath the nitride layer, as in claim 11.
- A nitride layer formed by one of a PECVD operation, a LPCVD operation, or a CVD operation (Col. 5, lines 10-18), as in claim 13.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinard et al. (Pat. 5,393,351) in view of Sato et al. (Pat. 5,852,239). Kinard et al. teaches the claimed invention, including:

- The use of silicon nitride layers as in elements 262 and 270, as in claims 2 and 3.

But he does not teach:

- A moisture barrier formed at least in part by a nitride layer, as in claim 2.
- At least one of the top sandwich system and the bottom sandwich system including at least one silicone carbide layer, as in claim 6.

Sato et al. teaches a flow sensor having a thin film of silicon carbide deposited over the surface of a substrate (Col. 4, lines 16-18).

Since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of experimentation for the purpose of utilizing the most suitable material; it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the thermal converter of Kinard et al. using the teachings of the flow sensor of Sato et al. by providing a layer of silicone carbide inside the membrane structure of the sensor for the purpose of utilizing a preferred well known material that would allow accurate flow measurements as part of the sensing device. And since it has been held that rearranging parts of an invention involves only routine skill in the art; In re Japikse, 86 USPQ70; it would also have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the thermal converter of Kinard et al. who does teach the use of nitride layers by utilizing them as a moisture barrier

composed at least in part by a nitride layer such as a silicon nitride layer for the purpose of providing environmental protection to the sensor by utilizing a material that well known in the art for having impermeable features, therefore making said converter more reliable and durable.

Citation of Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art considered pertinent during examination of the examined application is:

- Manaka (Pat. 5,423,212) Flow sensor. See Figures 5b,11b,13b,17b, and abstract.
- Treutler et al. (Pat. 5,703,287) Measuring element for a flow sensor. See Figures 1-4, Col. 1-4, and Claims 1-7.
- Renninger et al. (Pat. 6,318,170) Measurement device for measuring the mass of a flowing medium. See Figures 1-4 and abstract.
- Saul et al. (Pat. 6,290,388) Multi-purpose integrated intensive variable sensor. See Figure 2, and abstract.
- Treutler et al. (Pat. 6,240,777) Sensor having a membrane. See Figure 2, Col. 1-2, lines 53-14.
- Wan et al. (Pat. 5,965,813) Integrated flow sensor. See Figures 3 and Col. 6, lines 18-65.
- Higashi et al. (Pat. 4,682,503) Microscopic size thermal conductivity type, air or gas absolute pressure sensor. See Figures 1 and 2, and abstract.

- Renken et al. P(at. 4,542,650) Thermal mass flow meter. See Figures 6a and 6b, and Col. 9, lines 6-61.

Response to Arguments

Applicant's arguments filed April 3, 2002 have been fully considered but they are not persuasive. The argument presented by the applicant's representative regarding the objection to the drawings is not convincing, since he discloses that structures are provided in a platinum layer that comprise the heater or temperature measuring elements, but still he fails to point out where those structures are shown in the drawings. Regarding the arguments presented against Kinard's reference, the applicant is advised to review the rejection to claims 1-13 presented above which addresses all his arguments against Kinard's reference in a through and detailed manner.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilybett Martir whose telephone number is (703)305-6900. The examiner can normally be reached on 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Fuller can be reached on (703)308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3432 for regular communications and (703)305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

LM

Lilybett Martir
Examiner
Art Unit 2855

LM
July 1, 2002

Benjamin R. Fuller
Supervisory Patent Examiner
Technology Center 2800